

This Page Is Inserted by IFW Operations  
and is not a part of the Official Record

## **BEST AVAILABLE IMAGES**

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

**IMAGES ARE BEST AVAILABLE COPY.**

As rescanning documents *will not* correct images,  
please do not report the images to the  
Image Problem Mailbox.

**THIS PAGE BLANK (USPTO)**

(19)



Europäisches Patentamt  
European Patent Office  
Office européen des brevets

(11) Publication number:

**0 232 141**  
**A1**

(12)

# EUROPEAN PATENT APPLICATION

(21) Application number: 87300820.5

(51) Int. Cl.<sup>3</sup>: A 47 K 10/16

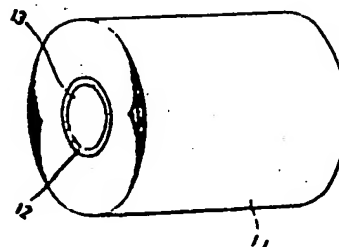
(22) Date of filing: 30.01.87

(30) Priority: 04.02.86 JP 14632/86

(43) Date of publication of application:  
12.08.87 Bulletin 87/33(84) Designated Contracting States:  
DE FR GB IT(71) Applicant: Suzuki, Takafumi  
10-9, Tenjinbashi 1-chome Kita-ku  
Osaka(JP)(72) Inventor: Suzuki, Takafumi  
10-9, Tenjinbashi 1-chome Kita-ku  
Osaka(JP)(74) Representative: Bankes, Stephen C. D. et al,  
Baron & Warren 18 South End Kensington  
London W8 5BU(GB)

(54) Core for toilet paper roll.

(57) A core (12) for a toilet paper roll (11) having a deodorant function in which an internal surface (13) of the core (12) with paper (11) wound therearound exhibits a deodorant effect. A material forming the internal circumferential surface (13) of the scroll (12) is coated or impregnated with a deodorant (13) to give a deodorant function to the inside (13) of the core (12), whereby the deodorant (13) is brought into contact with the air to eliminate unpleasant odours in a toilet.



EP 0 232 141 A1

CORE FOR TOILET PAPER ROLL

1           The present invention relates to a core for  
toilet paper formed into a roll, in particular to a  
core of which the internal circumferential surface has  
a deodorant function.

5           In general, since unpleasant odours tend to be  
generated in a toilet, it is necessary to take measures  
to deodorize the atmosphere.

To this end, there has been proposed a toilet  
paper roll, in which paper is wound around an external  
10 circumferential surface of a tubular core, usually made  
by winding strips of stout paper or cardboard, and the  
inside of the core is filled with activated carbon to  
impact a deodorant function.

Such a toilet paper roll has an advantage in that  
15 it is not necessary to place a separate deodorant  
device in a toilet. On the other hand, it has a  
disadvantage in that since activated carbon is used,  
malodorous substances adsorbed by activated carbon may  
be released again from activated carbon as the toilet  
20 paper is rotated, thus reducing the deodorant effect.

Furthermore the use of activated carbon leads to  
increased expense and the deodorant effect is not  
proportional to the frequency with which the toilet is  
used.

25           The present invention consists in a core for a  
toilet paper roll in which a deodorant substance is  
given to an internal circumferential surface of the  
core, with paper wound around an external surface  
thereof.

30           The core of the present invention does not  
release adsorbed substances into an air, and can thus

1 be made superior in deodorant effect to the activated  
carbon core. It can also be made economically, and has  
an effect which is proportional to the frequency with  
which a toilet is used.

5 The accompanying drawing is a perspective view  
showing a toilet paper using a scroll according to the  
present invention therein.

Referring now to the drawing, a roll of toilet  
paper 11 is wound around an external circumferential  
10 surface of a tubular scroll 12 as a core, said scroll  
12 having a deodorant function on its internal  
cylindrical surface thereof.

Said scroll 12 is formed from a plurality of  
pieces of paper by spirally winding them in axially  
15 staggered layers and the deodorant function is imparted  
by coating or impregnating a material forming the  
internal circumferential portion of the scroll 12 with  
a deodorant 13.

Since said scroll 12 is not brought into contact  
20 with an air excepting the internal circumferential  
surface thereof when used in the toilet paper 11, it is  
not necessary to give a deodorant function to portions  
other than the internal circumferential surface of the  
scroll 12.

25 One material which may be used for the deodorant  
13 is a compound obtained from ferrous sulfate and  
L-ascorbic acid. This deodorant 13 reacts particularly  
with strong smelling substances such as ammonia and  
hydrogen sulfide, existing in the toilet in great  
30 quantities. Ammonia of a volume about 100 times that  
adsorbed by activated carbon can be removed by the  
above compounds after one hour from the start of  
operation. Thus, this deodorant 13 is remarkably  
effective.

1           Accordingly, a deodorant paper having the area of  
the inner surface of scroll 12, for example  $136 \text{ cm}^2$ ,  
can exhibit an effect sufficient for the deodorization  
of a toilet having a volume of about  $4 \text{ m}^3$ .

5           The deodorant 13 can be applied to the internal  
circumferential surface of the scroll 12 in various  
ways, including a method in which the internal  
circumferential surface of the scroll 12 is formed of  
paper whose internal circumferential exposed surface is  
10 coated with the deodorant 13. In another method, said  
paper is impregnated with the deodorant 13, and in  
another the internal circumferential surface of the  
fabricated scroll 12 is itself directly coated with the  
deodorant 13, in a further method the internal  
15 circumferential surface of the scroll 12 is formed of a  
material other than a paper, such as a film, coated or  
impregnated with the deodorant 13.

          If the material forming the internal  
circumferential surface of the scroll 12 is coated or  
20 impregnated with the deodorant 13, as above described,  
the scroll 12 having the deodorant function can be  
manufactured without radically changing the  
manufacturing process, with consequent cost advantages.  
In addition, the adoption of this means of coating the  
25 deodorant 13 avoids the need for additional adhesives,  
which might come into contact with the deodorant and  
adversely affect its deodorant properties.

          With the roll 11 formed by winding the paper  
around the external circumferential surface of the  
30 scroll 12 having said construction, the scroll 12 is  
open at both ends thereof when used and the roll 11 is  
rotatably mounted on a holder by means of an idle shaft  
passing through the scroll 12, whereby air circulating  
through the scroll 12 is brought into contact with the

1 deodorant 13 to remove unpleasant odours.

Besides, the scroll 12 is rotated when the paper is used, whereby substances on the internal circumferential surface of the scroll 12 which have  
5 been altered by a chemical reaction are scraped by means of the shaft of the holder to expose the non-reacted surface of the deodorant 13. Thus, the strong deodorant effect can be always maintained.

Furthermore, since the rotational motion of the  
10 scroll 12 is not a true circle, an appropriate flow of air passes through the scroll 12, whereby odour-laden air is introduced into an inside of the scroll 12 to promote the deodorant effect.

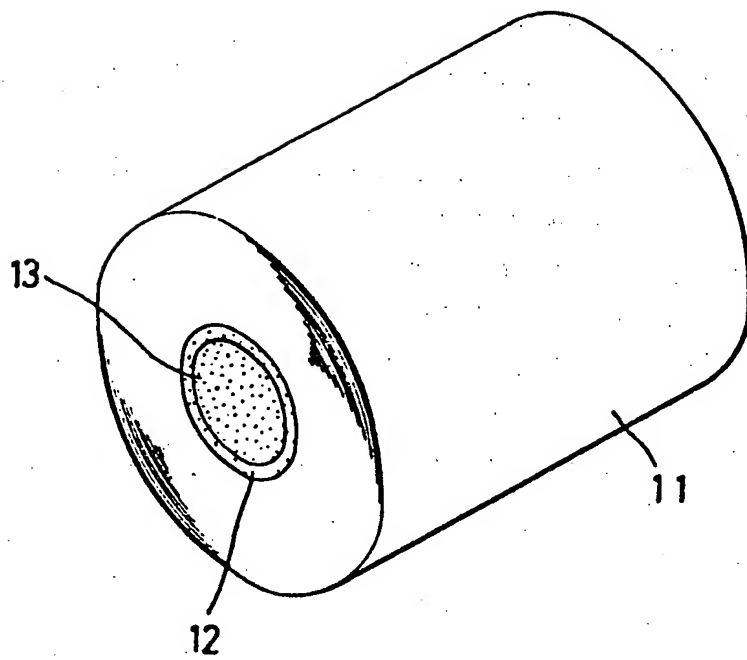
Accordingly, not only is a strong deodorant  
15 effect can be maintained until the paper is used up but also the toilet paper roll can be manufactured economically using conventional facilities.

It goes without saying that an anti-odorant can be used in place of said deodorant.

CLAIMS

- 1 1. A core for a toilet paper roll in which a deodorant substance (13) is given to an internal circumferential surface of the core (12) with paper (11) wound around an external surface thereof.
- 5 2. A core for a toilet paper roll as set forth in claim 1, in which the deodorant effect is imparted by applying a paper coated with the deodorant (13) the internal circumferential surface of the scroll (12).
- 10 3. A core for a toilet paper roll as set forth in claim 1, in which the deodorant effect is imparted by applying a paper impregnated with the deodorant in the formation of the internal circumferential surface of the scroll (12).
- 15 4. A core for a toilet paper roll as set forth in claim 1, in which a material other than paper is coated or impregnated with the deodorant (13).
- 20 5. A core for a toilet paper roll as set forth in claim 1, in which the deodorant effect is imparted by directly coating the internal circumferential surface of the scroll (12) with the deodorant (13).
6. A core for a toilet paper roll as set forth in any preceding claim, in which the deodorant is a compound obtained from ferrous sulfate and ascorbic acid.







European Patent  
Office

# EUROPEAN SEARCH REPORT

0232141

Application number

DOCUMENTS CONSIDERED TO BE RELEVANT			EP 87300820.5
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.4)
X	DE - A1 - 2 755 332 (FELDMÜHLE) * Fig. 1; page 8, 1st, 2nd paragraph * --	1,4	A 47 K 10/16
X	CH - A - 182 676 (METAUX-BLANCS) * Fig. 2; page 2, lines 24-27 * --	1,5	
X	AU - B - 21 010/83 (COSCO) * Fig. 7; page 8, lines 19-23 * ----	1,5	
			TECHNICAL FIELDS SEARCHED (Int. Cl.4)
			A 47 K 10/00
The present search report has been drawn up for all claims			
Place of search VIENNA		Date of completion of the search 07-04-1987	Examiner KNAUER
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	